

Appendix C

Paint Creek Project Herbicide Use Assumptions

Alternative B

Treatment	Glyphosate (acres)	Imazapyr (acres)	Triclopyr (acres)
a. Pre-harvest site preparation ¹	529	529	0
b. Post-harvest treatment ^{1, 2}	529	529	529
c. Midstory treatment	95	95	0
d. Wetland restoration	2	0	0
Total acres	1155	1153	529

¹ Includes both early successional forest creation and thinning treatment.

² Assumes the maximum number of acres to be treated; however, the actual number of acres treated would be fewer since not all stands would receive post-harvest site preparation (see Alternative B, #1 and #4: Post-harvest Site Preparation on pages 22 and 24 of the Paint Creek EA). This applies to the amount of herbicide used, calculated below, as well.

Treatment	Herbicide	Acres	Area Treated ³	Typical Usage Rate ⁴ (lbs/acre)	Lbs of Acid Equivalent
a, c	Glyphosate	624	0.06	2.00	74.9
a, c	Imazapyr	624	0.06	0.15	5.6
a, c	Triclopyr	0	0.06	0.50 ⁵	0.0
b	Glyphosate	529	0.06	2.00	63.5
b	Imazapyr	529	0.06	0.02 ⁶	0.6
b	Triclopyr	529	0.06	0.05 ⁶	1.6
d	Glyphosate	2	0.06	2.00	0.2
Total pounds (lbs) of acid equivalent					146.4

³ For site preparation and midstory treatments, approximately 200 spots or less are treated/acre. Assuming a liberal spot average of 4 feet in diameter (2-foot radius), 6% of the acre would be treated: $[(2 \text{ feet})^2 \times 3.14] \times 200 \div 43560 \text{ ft}^2/\text{acre} = 0.06$. Herbicide use in wetland restoration areas would be similar to that of a thinning.

⁴ The SERA Risk Assessments give typical Forest Service use rates per herbicide as:

- Glyphosate: Typical FS usage rate is 2 lbs. of acid equivalent (a.e.) per acre
- Imazapyr: Typical FS usage rate is 0.15 lbs. a.e./acre.
- Triclopyr: Typical FS usage rate is 1 lb. a.e./acre.

⁵ In (a) and (c), when Triclopyr is used in combination, it is used at half mixture, cutting the use rate in half.

⁶ In (b), the amount of herbicide used in a post-harvest stand is 1/10th of that used in pre-harvest stands.

Total acid equivalent use for Alternative B is 147 lbs over 626* acres (a + c + d) = 0.23 lbs/acre

* Treatment area b is the same area as a

Alternative C

Treatment	Glyphosate (acres)	Imazapyr (acres)	Triclopyr (acres)
a. Pre-harvest site preparation ¹	505	505	0
b. Post-harvest treatment ^{1, 2}	505	505	505
c. Midstory treatment	84	84	0
d. Wetland restoration	25	0	0
Total acres	1120	1095	505

¹ Includes both early successional forest creation and thinning treatment.

² Assumes the maximum number of acres to be treated; however, the actual number of acres treated would be fewer since not all stands would receive post-harvest site preparation (see Alternative C, #1 and #4: Post-harvest Site Preparation on pages 28 and 31 of the Paint Creek EA). This applies to the amount of herbicide used, calculated below, as well.

Treatment	Herbicide	Acres	Area Treated ³	Typical Usage Rate ⁴ (lbs/acre)	Lbs of Acid Equivalent
a, c	Glyphosate	589	0.06	2.00	70.8
a, c	Imazapyr	589	0.06	0.15	5.3
a, c	Triclopyr	0	0.06	0.50 ⁵	0.0
b	Glyphosate	505	0.06	2.00	60.7
b	Imazapyr	505	0.06	0.02 ⁶	0.6
b	Triclopyr	505	0.06	0.05 ⁶	1.5
d	Glyphosate	25	0.06	2.00	3.0
Total pounds (lbs) of acid equivalent					141.9

³ For site preparation and midstory treatments, approximately 200 spots or less are treated/acre. Assuming a liberal spot average of 4 feet in diameter (2-foot radius), 6% of the acre would be treated: $[(2 \text{ feet})^2 \times 3.14] \times 200 \div 43560 \text{ ft}^2/\text{acre} = 0.06$. Herbicide use in wetland restoration areas would be similar to that of a thinning.

⁴ The SERA Risk Assessments give typical Forest Service use rates per herbicide as:

- Glyphosate: Typical FS usage rate is 2 lbs. of acid equivalent (a.e.) per acre
- Imazapyr: Typical FS usage rate is 0.15 lbs. a.e./acre.
- Triclopyr: Typical FS usage rate is 1 lb. a.e./acre.

⁵ In (a) and (c), when Triclopyr is used in combination, it is used at half mixture, cutting the use rate in half.

⁶ In (b), the amount of herbicide used in a post-harvest stand is 1/10th of that used in pre-harvest stands.

Total acid equivalent use for Alternative C is 142 lbs over 615* acres (a + c + d) = 0.23 lbs/acre

* Treatment area b is the same area as a

Alternative D

Treatment	Glyphosate (acres)	Imazapyr (acres)	Triclopyr (acres)
a. Pre-harvest site preparation ¹	550	550	0
b. Post-harvest treatment ^{1, 2}	550	550	550
c. Midstory treatment	513	513	0
d. Wetland restoration	36	0	0
Total acres	1649	1613	550

¹ Includes both early successional forest creation and thinning treatment.

² Assumes the maximum number of acres to be treated; however, the actual number of acres treated would be fewer since not all stands would receive post-harvest site preparation (see Alternative D, #1 and #4: Post-harvest Site Preparation on pages 36 and 39 of the Paint Creek EA). This applies to the amount of herbicide used, calculated below, as well.

Treatment	Herbicide	Acres	Area Treated ³	Typical Usage Rate ⁴ (lbs/acre)	Lbs of Acid Equivalent
a, c	Glyphosate	1063	0.06	2.00	127.6
a, c	Imazapyr	1063	0.06	0.15	9.6
a, c	Triclopyr	0	0.06	0.50 ⁵	0.0
b	Glyphosate	550	0.06	2.00	66.0
b	Imazapyr	550	0.06	0.02 ⁶	0.7
b	Triclopyr	550	0.06	0.05 ⁶	1.7
d	Glyphosate	36	0.06	2.00	4.3
Total pounds (lbs) of acid equivalent					209.9

³ For site preparation and midstory treatments, approximately 200 spots or less are treated/acre. Assuming a liberal spot average of 4 feet in diameter (2-foot radius), 6% of the acre would be treated: $[(2 \text{ feet})^2 \times 3.14] \times 200 \div 43560 \text{ ft}^2/\text{acre} = 0.06$. Herbicide use in wetland restoration areas would be similar to that of a thinning.

⁴ The SERA Risk Assessments give typical Forest Service use rates per herbicide as:

- Glyphosate: Typical FS usage rate is 2 lbs. of acid equivalent (a.e.) per acre
- Imazapyr: Typical FS usage rate is 0.15 lbs. a.e./acre.
- Triclopyr: Typical FS usage rate is 1 lb. a.e./acre.

⁵ In (a) and (c), when Triclopyr is used in combination, it is used at half mixture, cutting the use rate in half.

⁶ In (b), the amount of herbicide used in a post-harvest stand is 1/10th of that used in pre-harvest stands.

Total acid equivalent use for Alternative D is 210 lbs over 1099* acres (a + c) = 0.19 lbs/acre

* Treatment area b is the same area as a

Application Methods

Foliar spray: Herbicide is selectively applied to the leaf surfaces of the targeted plant.

Hack-and-squirt: Incisions are made around the stem and herbicide is applied into this cut.

Streamline: Herbicide is applied in a stream to the stem of the targeted plant.

Cut surface: The targeted plant is cut off and herbicide is applied to the stump.

References

Syracuse Environmental Research Associates (SERA), Inc. 2004. Imazapyr (Arsenal, Chopper, and Stalker Formulations) Final Report. Task No. 14. SERA TR 98-21-14-01b.

Syracuse Environmental Research Associates (SERA), Inc. 2003. Glyphosate – Human Health and Ecological Risk Assessment Final Report. Task No. 9. SERA TR 02-43-09-04a.

Syracuse Environmental Research Associates (SERA), Inc. 2003. Triclopyr – Revised Human Health and Ecological Risk Assessment Final Report. Task No. 13. SERA TR 02-43-13-03b.